

REPORT TO CONGRESS

ON

MATTERS CONTAINED IN THE HELIUM ACT

(PUBLIC LAW 86-777)

FISCAL YEAR 1996

BY

THE SECRETARY OF THE INTERIOR

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EXECUTIVE BRIEF

Bureau of Land Management helium sales to Federal agencies and their contractors were 228 million cubic feet (MMcf)¹ in fiscal year (FY) 1996. Revenues from helium sales, services, and other sources were \$25.2 million which exceeded the \$16.2 million funded cost of operations. A payment of \$8.0 million was made to the Treasury for application to the Helium Fund debt.

As of September 30, 1996, the Government had \$424.1 million in helium program assets. Current liabilities were \$3.1 million (accounts payable and customer advances), and long-term debt to the U.S. Treasury decreased \$8.0 million to \$1,365.2 million, leaving a negative net worth of \$944.2 million.

At the end of FY 1996, there was 35.1 billion cubic feet (Bcf) of helium stored in the Cliffside helium storage reservoir. Of this volume, 31.1 Bcf belonged to the Government and 4.0 Bcf to private industry. Estimates of helium demand made in 1992 by the helium-using Federal agencies for the period 1996-2015 totaled 9.8 Bcf. Thus, the Government's current helium reserve is adequate to meet the estimated demand through this period.

Operation of the Government's helium conservation pipeline and storage system averted shortages of private helium as private companies used the Government's pipeline and storage system to store their helium. In FY 1996, the BLM stored 1,325 MMcf and returned 792 MMcf of privately owned crude helium through the pipeline.

¹All volumes in this report are at 14.7 pounds per square inch absolute and 70 °F

1. Nature and Scope of Report

This report complies with Section 16 of the Helium Act Amendments of 1960 (Public Law 86-777) advising Congress of the status of the Government's helium program. It contains operating, statistical, and financial information about the program for the fiscal year ending September 30, 1996.

2. General Status of the Government's Helium Program

The Federal Helium Program was administered through the United States Bureau of Mines (USBM) until its closure on March 30, 1996. In September 1995, the 104th Congress enacted legislation to close USBM and transfer any remaining functions to other agencies. On March 11, 1996, the Secretary of the Interior signed a Secretarial Order transferring the responsibility and operation of the Federal Helium Program to the Bureau of Land Management (BLM).

The Federal Helium Program is conducted by the BLM for the Secretary of the Interior under 50 U.S.C. 161, et seq; which provides for the current and foreseeable future helium requirements of essential Government activities. The program includes the production, conservation, sale, and distribution of helium; helium resources evaluation; and Federal helium resources disposition as follows:

- a. Meeting the current helium demand of all Federal agencies. This includes operation, utilization, and maintenance of helium plants and shipping containers (high-pressure cylinders, semitrailers, railway tank cars, liquid helium dewars, and liquid helium semitrailers) for the production and distribution of helium to those agencies.
- b. Providing, for the foreseeable future, helium requirements of essential Government programs. This includes operation, utilization, and maintenance of natural gas and helium storage fields and gas gathering, metering, transportation, and injection well systems for the conservation and storage of helium and helium-gas mixtures.
- c. Conducting investigations and evaluations for improving all aspects of the helium program. This includes the development of more efficient methods for producing, distributing, conserving, and storing helium and the improvement of techniques for locating natural gas fields and evaluating their helium content for inclusion in the U.S. helium resource base.
- d. Conducting research to identify private leaseholds that have extracted and processed Federal helium from natural gas. This includes entering into contracts and collecting revenues due to the Federal Government.

The BLM carries out these functions through the Helium Program Manager in Washington, D.C., and the General Manager--Helium Operations (HO), Amarillo, Texas. The BLM owns two helium plants, the Cliffside Federal helium storage reservoir, and related pipelines in Texas, Oklahoma, and Kansas.

The emphasis of the BLM's helium program is on production, distribution, and conservation of helium for essential Government needs. Historically, the USBM managed the program to provide users with assured quantities and qualities of helium. Section 6(a) of the Helium Act provides: "The Department of Defense, the Atomic Energy Commission, and other agencies of the Federal Government, to the extent that supplies are readily available, shall purchase all major requirements of helium from the Secretary (of the Interior)."

The BLM sold 228 million cubic feet (MMcf)¹ of helium in FY 1996, almost all of which was purchased by Federal agencies or their contractors. Sales were made directly from the BLM to the various customers or through contract distributors under contracts described in the Code of Federal Regulations (30 CFR 602).

As of September 30, 1996, the Government had \$424.1 million in helium program assets. (See Table 7, page 10.) As of September 30, 1996, liabilities were \$3.1 million (accounts payable and advances) and long-term debt to the U.S. Treasury was \$1,365.2 million, leaving a negative net worth of \$944.2 million.

3. Reviews and Reports

Statutory Reassessment

In the Vice President's National Performance Review (NPR), it was determined that the Federal Government needed to reexamine its role in the Federal Helium Program. The report stated that the program can be run more efficiently, reducing outlays by Federal helium customers and increasing revenue. The following recommendations were made: cancel the helium debt, reduce the selling price for Federal helium, increase private helium storage fees, discontinue non-revenue producing functions and increase efficiencies of helium operations, and begin sales of crude helium as market conditions permit. Subsequent legislation, enacted in 1996 and discussed below, stopped interest accrual on the helium debt as of October 1, 1995.

On October 9, 1996, President Clinton signed the Helium Privatization Act of 1996 (Public Law 104-273). This legislation directs Helium Operations to discontinue production and sale of refined helium by no later than 18 months from the date of enactment (by April 9, 1998). Key components of the legislation are as follows:

¹All volumes in this report are at 14.7 pounds per square inch absolute and 70 °F.

- a. Cease production and sales of grade-A² helium on or before April 9, 1998, allowing customers to purchase helium from private industry;
- b. Dispose of all helium production, refining, and sales-related assets not later than 24 months after helium refinery closing;
- c. Begin to sell Federal reserves of crude helium in excess of 600 MMcf on or before January 1, 2005, and complete those sales by January 1, 2015; and price the crude helium so that the helium debt will be repaid by the time the reserve is sold;
- d. Continue operation of the helium storage system which includes the storage field and crude helium pipeline that is utilized for storage and distribution of both Government-owned and privately owned crude helium;
- e. Continue collection of helium royalties and fees from sales of helium extracted from gas produced from Federal lands; and
- f. Continue helium resource evaluation and reserve tracking to monitor helium availability for essential Government programs.

4. Conservation

As part of its responsibility in the area of conservation, the BLM maintains the Cliffside helium storage reservoir, associated pipelines, and measuring and monitoring services. In the mid-1970's, the USBM, previous administrator of the Federal Helium Program, began accepting privately owned crude helium for storage in the Cliffside reservoir under long-term contracts. Private industry currently has more than 1 year's supply of helium, at the world's current consumption rate, in Government storage. In FY 1994, 17 of 20 helium storage contracts expired or were voluntarily terminated and replaced with eight "new" helium storage contracts. Three inactive "old" storage contracts remain in effect. Revenues collected from storage and transmission operations have increased due to provisions included in the "new" storage contracts.

As of September 30, 1996, 35,081 MMcf of helium was in underground storage in the Government's Cliffside helium storage reservoir near Amarillo, Texas. Of this, 31,047 MMcf was Government-owned and 4,034 MMcf was privately owned. In addition, there was 3,793 MMcf of helium contained in producible native natural gas in the reservoir. Therefore, the Cliffside storage reservoir contained about 38,874 MMcf of helium. During the year, 1,325 MMcf was accepted for storage for private industry under storage contracts, and 792 MMcf was redelivered from storage to its owners, for a net increase in private storage for the year of 533 MMcf of helium.

²Helium purity of at least 99.995 percent.

The BLM purified 228 MMcf of grade-A helium from previously stored Federal crude helium in FY 1996. Almost all of this, over 99 percent, was supplied to Federal agencies or their contractors.

5. Supply and Demand

Natural gas containing about 0.3 percent (3,000 parts per million) or more helium continues to be the only economical source of helium in the United States. The BLM conducts an annual survey of the United States and foreign countries to identify new helium-bearing natural gas fields and to appraise and evaluate proved helium reserves and probable resources. This year, helium resources work included analyses of 77 gas samples from gas wells and pipelines and the evaluation of gas fields to determine helium content.

The BLM estimates the measured and indicated helium resources in “helium-rich”³ natural gas in the United States as of January 1, 1993,⁴ to be 250 billion cubic feet (Bcf).⁵ Of this volume, about 89 Bcf is in gas found in reservoirs that are not being produced. Such helium resources are classified as “nondepleting.” The 250 Bcf in the helium-rich gas plus the 35 Bcf of Government and private helium in storage provides the United States with 285 Bcf of helium resources.

The Federal Government owns approximately 173 Bcf, or 60.7 percent, of the 285 Bcf of the stored and helium-rich measured and indicated helium resources in the United States. This includes 31 Bcf in storage, 4 Bcf in Cliffside field native natural gas, and 77 and 61 Bcf in depleting and nondepleting natural gas resources on Federal lands. Revenue collected during fiscal year 1996 for helium extracted from Federal lands by private leaseholds was over \$4.3 million.

In 1992, the USBM obtained estimates of the helium needs through the year 2015 of the six major helium-using agencies (National Aeronautics and Space Administration, Department of Defense, Department of Energy, National Oceanic and Atmospheric Administration, National Institute of Standards and Technology (formerly National Bureau of Standards), and National Science Foundation). The total demand estimated for the period 1996-2015 is 9.8 Bcf. Therefore, the Government's helium supply of 31.1 Bcf in Cliffside is adequate to supply the Federal agencies' demand for this period.

The total market for U.S.-produced helium decreased to 3,369 MMcf in FY 1996 compared to 3,434 MMcf in FY 1995. The BLM supplied about 7 percent of the

³Natural gas containing 0.30 percent or more of helium.

⁴Latest data available from internal report.

⁵Where appropriate, volumes in this report have been rounded to the nearest billion cubic feet.

domestic market, and private industry supplied 93 percent. Table 1 shows the total market for U.S.-produced helium from FY 1987 through FY 1996, including exports. In 1996, private industry exported 872 MMcf of helium.

TABLE 1. - Market Demand for U.S.-Produced Helium
(Million cubic feet)

<u>Fiscal Year</u>	<u>Volume</u>	<u>Fiscal Year</u>	<u>Volume</u>
1987	2073	1992	3,314
1988	2,420	1993	3,313
1989	2,688	1994	3,389
1990	2,984	1995	3,434
1991	3,123	1996	3,369

6. Production

Since 1981, all Federal helium demand has been supplied by grade-A helium production from the BLM's Exell Helium Plant in Texas. The Exell plant produces grade-A helium from Government-owned crude helium and processes a small volume of Cliffside native gas for plant energy requirements and helium recovery. In FY 1996, major project work at the helium facilities was limited to work required to maintain operation and work with a short pay-back period. Some of the work done to enable Helium Operations (HO) to continue to supply helium was as follows: the replacement of low-pressure helium boiloff collection bags, repair of the incoming gas treating still, repair and modification of the gas treating solution reclaimer, and acoustic emission and ultra-sonic testing (AE/UT) of 14 gaseous helium trailers and 32 gaseous helium tank cars.

The Department of Transportation approved HO's exemption application for AE/UT of railroad tank car pressure vessels. This exemption allows AE/UT in lieu of hydrostatic testing and increases the retest period from 5 to 10 years.

A baseline human and environmental risk assessment for a 331-acre tract of land owned by HO was sent to the Texas Natural Resources Conservation Commission. A legislatively mandated transfer of the tract of land (also known as the Landis property) to the Texas Plains Girl Scout Council is pending. The aforementioned assessment is required to officially close two old landfills on the property and before transfer of ownership of the tract can be completed.

Table 2 shows BLM production for FY 1987 through FY 1996.

TABLE 2. - Bureau of Land Management Helium Production*
(Million cubic feet)

<u>Fiscal Year</u>	<u>Volume</u>	<u>Fiscal Year</u>	<u>Volume</u>
1987	281	1992	341
1988	327	1993	321
1989	352	1994	270
1990	401	1995	248
1991	370	1996	228

*Grade-A production from previously purchased BLM crude helium plus contract purification of privately owned and stored crude helium for private markets. In FY 1996, BLM production for Federal agencies and a few private industry accounts was 228 MMcf.

7. Sales and Distribution

Sales to Federal agencies, Federal agency contractors, and a few private industry customers totaled 228 MMcf in FY 1996. Table 3 shows BLM sales for FY 1987 through FY 1996. Reduced spending for defense, nuclear research, and space activities has contributed to the decrease in Federal helium sales.

Distribution of BLM helium to the Federal market requires large numbers of Government-owned containers for shipping gaseous or liquid helium. Gaseous helium shipping containers include high-pressure cylinders, automotive semitrailers, and railway tank cars. Low-pressure liquid helium shipping containers include 100- and 500-liter dewars and bulk liquid helium semitrailers. Because these containers are used in interstate commerce, they must be maintained and tested according to Department of Transportation regulations. Tank car maintenance and AE/UT are provided at the Exell Helium Plant. High-pressure cylinders used for high purity helium and special analytical purposes are maintained and hydrostatically tested at the Amarillo Helium Plant. Maintenance of gaseous semitrailers and dewars is performed at both plants. In 1996, the BLM filled and shipped 275 railway tank cars, 853 automotive semitrailers, 3,150 liquid helium dewars, 29 liquid helium automotive semitrailers, and 1,182 cylinders.

TABLE 3. - Volume of Bureau of Land Management Helium Sales
(Million cubic feet)

<u>Fiscal Year</u>	<u>To Private Industry</u>	<u>To Federal Agencies*</u>	<u>Total</u>
1987	2	270	272
1988	1	317	318
1989	1	343	344
1990	1	392	393
1991	1	349	350
1992	1	325	326
1993	1	292	293
1994	1	248	249
1995	1	244	245
1996	0**	228	228

*Includes sales made through private helium distribution contractors under 30 CFR 602.

**Approximately 396 Mcf of helium was sold to private industry.

8. Technical Studies and Evaluations

The Technical and Analytical Services Laboratory provided technical and analytical services to Federal agencies, Federal agency contractors, private industry, and universities with specialized gas mixture requirements; calibration mixtures; and local conservation, production, process, and environmental operations. The laboratory developed several analytical methods including those for heavy metals in process solutions, oil and grease in waste water, and dissolved gases in process solutions. In addition, the laboratory assisted a researcher with helium analysis of gas samples from a purported cold fusion process.

A BLM Technical Note 398 entitled "A Mass Spectrometer Method for Determining Percent-Range Helium in Gaseous Mixtures," which describes a new analytical method for determining 30 to 100% helium in gaseous mixtures and natural gases, is to be published.

9. Helium Program Expenditures, Income, and Financial Condition

As of September 30, 1996, the Federal Government had \$424.1 million in helium program assets of which \$366.2 million was invested in helium stored for future use (crude helium purchases); \$12.3 million in helium plants, gasfields, pipelines, and transportation equipment; and \$45.6 million in current assets. Program income during FY 1996 was \$25.2 million. Funded cost of operations was \$16.2 million.

The Helium Privatization Act of 1996 stipulated that no more interest would accrue on the helium debt, and, as of September 30, 1995, that debt stood at \$1,373.2 million. Repayment of \$8.0 million in FY-96 reduced the debt to \$1,365.2 million. Net worth in FY 1996 was a negative \$944.2.

Table 4 shows the status of the indebtedness as of September 30, 1996. Table 5 outlines the helium program's cash flow during FY 1996.

TABLE 4. - Status of Indebtedness of Helium Fund, September 30, 1996

Indebtedness to U.S. Treasury, September 30, 1995	\$1,373,203,782
Interest accrued on indebtedness during FY 1996	<u>0</u>
Total indebtedness prior to repayments	\$1,373,203,782
Repayments to U.S. Treasury during FY 1996	<u>8,000,000</u>
Indebtedness to U.S. Treasury, September 30, 1996	\$1,365,203,782

TABLE 5. - Helium Program Cash Flow, Fiscal Year 1996*

Cash on hand September 30, 1995	\$33,619,022
Cash received during 1996	<u>26,923,390</u>
Cash available in 1996	60,542,412
Cash disbursements in 1996	<u>24,688,708</u>
Cash on hand September 30, 1996	\$35,853,704

*Cash receipts and disbursements may contain entries from prior fiscal years. Totals could vary from revenues earned or obligations paid during the fiscal year.

Table 6 shows the total funds required and funds available in FY 1996 on an accrued expense and income basis. Table 7 summarizes the assets, liabilities, and net worth of the Helium Fund as of September 30, 1996.

TABLE 6. - Helium Fund Statement, Fiscal Year 1996

ACCOUNTS PAYABLE, SEPTEMBER 30, 1995		\$2,228,276	
FUNDS REQUIRED, FY 1996: *			
Nonexpendable transfers		8,000,000	
Conservation and storage of helium		1,035,333	
Production and sales of helium		14,229,508	
Administration and other expenses		941,827	
Capital investment		<u>297,000</u>	
<i>Subtotal</i>			<u>\$26,731,944</u>
FUNDS AVAILABLE FROM OPERATIONS:			
Income from helium sales, services, and other sources			
Net revenue, FY 1996		\$25,182,950	
Accounts receivable, start of year	\$2,805,776		
Less: Accounts receivable and advances, end of year	<u>(1,988,342)</u>		
Net		817,434	
Cash on hand, start of year	33,619,022		
Less: Cash on hand, end of year	<u>(35,853,704)</u>		
Net		(2,234,682)	
Advances		587,473	
Net changes in other assets		<u>468,329</u>	
<i>Subtotal</i>			<u>\$24,821,504</u>
ACCOUNTS PAYABLE, SEPTEMBER 30, 1996			<u>\$1,910,440</u>

*Funds required are shown on a cash outlay basis and differ slightly from budget numbers which are based on obligations.

TABLE 7. - Helium Program Financial Condition, September 30, 1996

CURRENT ASSETS:		LIABILITIES:	
Cash	\$35,853,704	Accounts payable	\$1,910,441
Accounts receivable	1,986,472	Advances	1,223,970
Advances	1,870	Unfunded liability	0
Inventory and work in process	<u>7,739,816</u>	Long term debt to U.S. Treasury	<u>1,365,203,782</u>
<i>Total current assets</i>	\$45,581,862	<i>Total liabilities</i>	\$1,368,338,193
FIXED ASSETS:		NET WORTH:	
Helium in underground storage	366,235,464	Donations and transfers*	46,911,210
Plants, property, and equipment (net)	<u>12,275,639</u>	Retained earnings** (deficit)	(991,156,438)
<i>Total fixed assets</i>	<u>\$378,511,103</u>	<i>Total net worth</i>	<u>(\$944,245,228)</u>
TOTAL Assets	<u>\$424,092,965</u>	TOTAL Liabilities & Net Worth	<u>\$424,092,965</u>

* Donations and transfers represent an accumulation of donated and transferred capital items primarily from other Government agencies. These include property and equipment transfers since the beginning of the Helium Program.

** Retained earnings is an accumulation of net revenue and expenses over the life of the Helium Program. This deficit (retained earnings) is a result of several years of cumulative operating losses attributed entirely to the accrual of long-term interest payable to Treasury.